

Figure 23. Illustration of Use and Placement of Culverts and Ditches for Wetland Roads.

13. FOREST ROADS - CONTROLLING SEDIMENT MOVEMENT AND TRANSPORT DURING RAIN EVENTS

During rain events, excessive water flows can erode a forest road causing sediment to be eventually transported into a stream or other water body. Described below are various devices that can help mitigate erosion and sediment movement. These devices work by interrupting the flow of water and sediment, causing the sediment to be deposited, trapped or filtered out before reaching an open water body. Establishing a maintenance schedule following rain events is key to the proper functioning of these devices.

Described below are examples of such control devices:

- ▶ **Erosion Barriers** – Pre-seeded erosion control products at the toe slope of a road and at the outlets of culverts, diversion ditches, water bars, or broad-based dips, or the use of rock or large stone (an average diameter of 6 inches) placed on the toe of road and outlet of the diversion structures should be the first choices. While cheap and handy, laying down slash is not very good in reducing the velocity and erosive impacts of concentrated flows during significant rainfall events.
- ▶ **Silt Fence** – A geotextile fabric, when installed properly, has the capability of retaining most suspended materials, (e.g. sediment) and releasing the filtered runoff through the fabric. Do not use in permanent flowing streams or in any location with concentrated flows. See Figure 5 for an illustration of how to properly install silt fence. It is most commonly installed at or beyond the toe of a slope to trap sediment coming from overland sheet flows during a storm event. Silt fence must be installed along the same elevation contours across the slope to prevent runoff from flowing around the fence. For long slopes or large areas, silt fence should be installed parallel to each other in a series with an average spacing of 200 feet and drain no more than one-half acre per 100 feet of fence.

- **Riprap** – This term refers to rock installed at the outlet of diversion devices and drainage culverts to prevent erosion from occurring at the outlet. The rock must be of such a size (ranging from 3 to 12 inches in diameter) so that it will stay in place at the outlet during times of strong concentrated flows. Also, to insure concentrated flows have an adequate space to slow down and filter into the soil or vegetation, the length of the riprap should be at least 5 feet in length and 3 feet in width.
- **Check Dams** - Check dams (see Figure 24), generally constructed of rock, may be necessary to reduce the velocity of flow in roadside ditches or in other concentrated flow areas. Check dams can reduce the potential for erosion and protect vegetation in the early stages of growth. The primary purpose of check dams is to reduce water flow to non-erosive velocities. Refer to Figure 25 for proper spacing of check dams. For rock based check dams, construct the check dam using rock having a range of sizes from 3 to 12 inches in diameter (average of 6 inches). The key is that the rock stays in place to withstand strong concentrated runoff flows.

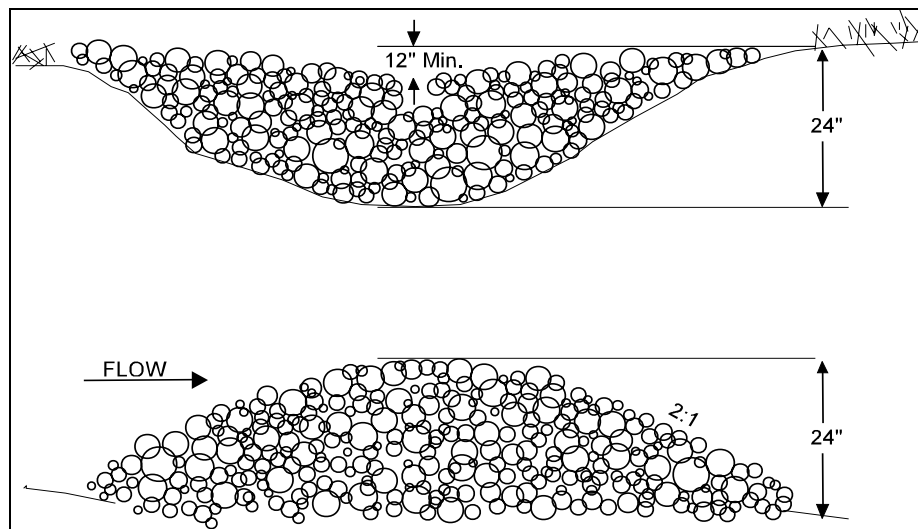


Figure 24. Cross Sectional Views of a Check Dam.

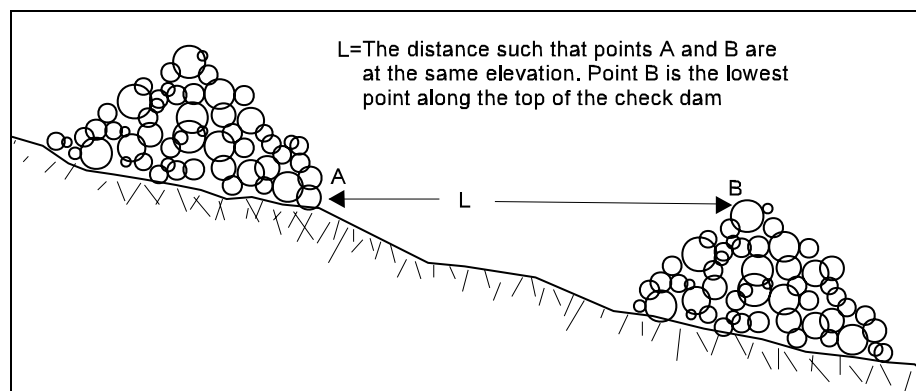


Figure 25. Check Dam Spacing.